

Nevada's Medicaid Expansion and Admissions for Ambulatory Care–Sensitive Conditions

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Précis: Hispanic patients with Medicaid were more likely to be admitted for ambulatory care sensitive conditions after Nevada's Medicaid expansion.

Takeaway Points

- Hispanic patients with Medicaid were more likely to be admitted for ambulatory care–sensitive conditions after Nevada's Medicaid expansion.
- Nevada's Medicaid expansion program might need to be optimized to realize improvements in access to outpatient care for minority patients.
- This study adds to the literature on the impact of Medicaid expansions on patient outcomes and healthcare disparities.
- For other states still considering expanding Medicaid under the Affordable Care Act, our study suggests that a thorough assessment of available healthcare resources (e.g., adequacy of healthcare provider workforce with anticipated demand for care) needs to take place prior making a final decision.

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ABSTRACT

Objectives: In January 2014, Nevada became 1 of the 32 states that expanded Medicaid under the Affordable Care Act. As a result of the expansion, 226,605 additional Nevada residents received Medicaid insurance. The objectives of this paper were to examine the impact of Nevada's Medicaid expansion on changes in rates of hospital admissions for ambulatory care-sensitive conditions (ACSCs), which are potentially preventable with good access to outpatient medical care, and to examine the racial/ethnic disparities in such rates.

Study Design: We used complete inpatient discharge data (for the years 2012, 2013, and 2014, and the first 3 quarters of 2015) from all nonfederal acute care community hospitals in Nevada.

Methods: We employed pooled cross-sectional design with a difference-in-differences approach to identify overall and race/ethnicity-specific changes in ACSCs adjusted for secular trends unrelated to expansion. We examined admissions for ACSCs among adults aged 18 to 64 years (those most likely to have been affected by the reform) admitted for overall, acute, and chronic ACSC composites in the 24 months before and 21 months after the date on which expansion was implemented.

Results: After adjusting for confounders, we found that Hispanic patients with Medicaid were more likely to be admitted for ACSCs after Nevada's Medicaid expansion (overall quality composite: odds ratio [OR], 1.20; $P = .05$; chronic quality composite: OR, 1.34; $P = .02$).

Conclusions: This analysis provides evidence that Medicaid expansion may have limited potential to reduce the disparities in rates of hospital admissions for ACSCs. In Nevada, additional efforts might be needed to improve access to outpatient care and reduce preventable admissions.

In January 2014, Nevada became 1 of the 32 states that has expanded Medicaid eligibility under the provisions of the Affordable Care Act (ACA) to adults with annual incomes up to 138% of the federal poverty level.¹ Since the expansion of the Medicaid program 276,400 additional Nevada residents have become covered under it.² Total net enrollment in Nevada's Medicaid program increased by 83% (as of July 2016) and is second in total enrollment in a state, only to Kentucky among all 50 states.² Furthermore, the uninsured rate in Nevada dropped from 20% in 2013 to 15.7% in 2014.³ Unfortunately, the rapid increase in the number of Medicaid beneficiaries in Nevada has not yet seen a corresponding increase in a number of providers available to treat new Medicaid enrollees.⁴ Nevada ranks 48th in number of physicians per 100,000 residents and 50th in the number of primary care physicians per 100,000 residents in the United States providing care, falling far below the national rate.^{5,6}

An important policy concern that arises is whether the improvement in insurance coverage through Medicaid expansion can achieve positive effects on access to care in states like Nevada where healthcare resources are historically lacking, relatively more people are uninsured, and population health status and economic levels are below the national average. Previous expansions in Medicaid eligibility in individual states (e.g., Massachusetts, Oregon) showed improved access to care, increased healthcare utilization, better chronic care management, and reduced out-of-pocket expenditures among newly enrolled individuals.⁷⁻¹⁰ Similarly, individuals who received health insurance through the Medicaid expansions under the ACA reported improvements in access to outpatient care, specialty care, better preventative care coverage, improved quality of care, and better overall health.¹¹⁻¹⁷

Using Nevada's 2014 Medicaid expansion as an example, our paper sheds light on how an expansion in coverage may affect access to care for Medicaid beneficiaries. We are using admissions to hospital for ambulatory care-sensitive conditions (ACSCs) as a validated indicator to measure the effectiveness of Medicaid expansion on access to outpatient care.¹⁸ ACSCs are conditions that might not have occurred if the patient had received appropriate and timely outpatient care.^{19,20} Economic theory indicates that reduced out-of-pocket price of care (e.g., through Medicaid expansion) increases demand for outpatient care.²¹ The increased use of outpatient care should decrease hospital admissions or emergency department (ED) visits for ACSCs among Medicaid enrollees. However, if there is a shortage in provider supply for outpatient care, the increased demand for care will most likely be diverted to the hospital or ED

as an alternative for regular care.²¹ Given the constant number of providers in Nevada before and after ACA implementation, we hypothesized an increase in hospitalizations for ACSCs among Medicaid patients. We used a difference-in-differences (DID) design to compare longitudinal changes (from before to after ACA implementation) in hospital admissions for ACSCs. Using Nevada as a focal point, we can illustrate how residents in other expansion states with limited provider supply may experience difficulties accessing outpatient care. Furthermore, our findings could be useful for policy makers in nonexpansion states that, despite limited resources available to adequately cover potential new Medicaid beneficiaries, are considering expanding Medicaid.

METHODS

Data

We used the State Inpatient Data of Nevada (SIDN) for 2012, 2013, 2014, and the first 3 quarters of 2015. We did not have access to data from the fourth quarter of 2015 when the analyses were performed. The SIDN contain complete information on discharged hospital admissions from all nonfederal acute care community hospitals in Nevada. We included a total of 213,956 hospital admissions in our analysis.

Measures

Our dependent variables were admissions for conditions that comprise the Preventive Quality Indicators (PQIs), developed by the Agency for Healthcare Research and Quality (AHRQ) and endorsed by the National Quality Forum as evidence-based tools to assess access to care.²² Specifically, we used AHRQ PQI software to examine chances of being admitted for 3 composite measures for ACSCs: acute composite ACSCs (dehydration, urinary tract infection, and bacterial pneumonia), chronic composite ACSCs (short-term and long-term complications of diabetes, chronic obstructive lung disease, hypertension, heart failure, and angina), and overall composite ACSCs (acute and chronic measures combined). Three dummy variables were created for each of the 3 composite PQIs for each patient, with the value of 1 indicating the patient was admitted for a PQI and the value of 0 indicating the patient was not admitted for a PQI.

Our primary independent variables were time (whether the admission occurred before or after Medicaid expansion) and health insurance status (Medicaid vs uninsured). Among the 2 insurance groups, 1 dummy variable was created, with Medicaid coverage being coded as 1; the

uninsured status served as the reference group and was coded as 0. Nevada expanded Medicaid on January 1, 2014. Thus, we considered admissions from 2012 and 2013 as prior to Medicaid expansion (coded as 0) and 2014 and 2015 as after Medicaid expansion (coded as 1).

Data Analysis

Data analysis was performed in SAS version 9.3 (SAS Institute Inc; Cary, North Carolina) and included descriptive, bivariate, and regression analyses. We used a pooled cross-sectional design, given that we were unable to track individual patients. The unit of analysis was the hospital admission, and admissions from the same patients were assumed independent. To confirm our ability to use the DID approach for multivariable data analysis, we first tested a presence of a constant parallel trend between Medicaid and the uninsured groups before Medicaid expansion using multiple linear regression models with insurance group and time as predictors.²³⁻²⁴

Because the differences between the 2 trend slopes were small and P values for time for all composites were greater or equal to 0.10 (the estimated marginal differences between the 2 slopes from the fitted models were 0.02 [$P = .33$], 0.06 [$P = .10$], and 0.001 [$P = .95$], we concluded that there was no significant difference between Medicaid and the uninsured groups during the pre-expansion period, thus allowing us to use the DID approach for our analysis. The first difference was the odds of having a PQI hospitalization between Medicaid patients and uninsured patients. The second difference was odds of experiencing a change in the first difference before and after the Medicaid expansion. Percentages of overall, acute, and chronic composite measures among all hospital discharges were 11.2%, 3.2%, and 8.0%, respectively, indicating that the use of odds ratios (ORs) to approximate relative risk was appropriate.²³ We treated hospital as the random effect, to account for the within-hospital variations. Our analytical model is presented below:

$$\gamma_{ist} = \beta_0 + \beta_1 Insurance_s + \beta_2 ME_t + \beta_3 Insurance_s \times ME_t + \theta\chi_i + \varepsilon_{ist},$$

where γ_{ist} is a binary outcome for the i -th subject given s -type insurance and t -type Medicaid expansion, the variable *Insurance* is binary with $Insurance_s = 1$ when this subject belongs to the Medicaid group, and the *ME* (Medicaid expansion) variable is also binary with $ME_t = 1$ when the subject is from post-Medicaid expansion. The interaction term $Insurance_s \times ME_t$ is used to

estimate the effect of Medicaid expansion in the DID approach. χ_i represents the independent variables from the i -th subject (e.g., age, race, etc).

Our multivariate model was adjusted for the patient's age, sex, race, and comorbidity index,²⁵ and for hospital-level characteristics, such as bed size, ownership type, teaching affiliation, and rural or urban location. The Institutional Review Board of the University of Nevada deemed this study exempt from human subjects research.

RESULTS

Patient Sample

We examined 213,569 hospital admissions that occurred during 2012 to 2015. Prior to Medicaid expansion, Medicaid enrollees admitted to a hospital due to ACSCs were more likely to be non-Hispanic whites, younger, and female compared with uninsured individuals. After Medicaid expansion, similar patterns remained, although Hispanic patients enrolled in Medicaid were less likely to be admitted compared with uninsured individuals. Additionally, Medicaid patients had longer hospital stays before and after Medicaid expansion. Finally, uninsured patients were more likely to be admitted through the ED, regardless of Medicaid expansion (**Table 1**). Based on the Medicaid (7%) and uninsured (11%) rates in Nevada in 2014, our sample population can be viewed as a robust representative sample of the entire state's population (23% with Medicaid, 6% uninsured in our sample).²⁶

Trends in Hospital Admissions for ACSCs

The **Figure** illustrates the changes in the overall, acute, and chronic ACSC composites between Medicaid and uninsured patients from 2012 to 2015. We present data on a quarterly basis due to unlikely immediate effects of Medicaid expansion on the uptake of coverage. Pre-expansion trends for overall, acute, and chronic ACSC composites are similar for Medicaid and uninsured individuals. However, the post-expansion trends for the overall, acute, and chronic ACSC composites increased rapidly among Medicaid patients, compared with uninsured patients, indicated by 3 pairs of clear and consistent curves that crossed over at the beginning of 2014 (Figure; **Tables 2 and 3**).

Effects of Medicaid Expansion on Access to Care

We found no statistically significant differences in odds of being admitted for overall (OR, 0.80; 95% CI, 0.34-1.27; $P = .36$), acute (OR, 0.81; 95% CI, 0.47-1.15; $P = .23$), and chronic (OR, 0.86; 95% CI, 0.43-1.30; $P = .51$) ACSC composites between Medicaid and uninsured patients in the pre- and the post Medicaid expansion periods in Nevada (Table 3).

Additionally, we analyzed racial/ethnic differences in admissions for ACSCs in the pre- and the post Medicaid expansion periods in Nevada (**Table 4**). We found that white patients enrolled in Medicaid did not show changes in admissions for ACSCs compared with their uninsured counterparts during the post-expansion period (OR, 0.71; 95% CI, 0.14-1.29; $P = .25$). Similarly, Hispanic patients enrolled in Medicaid did not show changes in admissions for ACSCs compared with their uninsured counterparts during the post-expansion period (OR, 0.85; 95% CI, 0.26-1.45; $P = .85$). We also found that Hispanic patients enrolled in Medicaid were significantly more likely to be admitted for an overall quality composite (OR, 1.20; 95% CI, 1.01-1.38; $P = .05$) during the post-expansion period. Additionally, Hispanic patients with Medicaid insurance showed increased but insignificant odds of being admitted for a chronic ACSC composite compared with uninsured Hispanic patients during the post-expansion period (OR, 1.04; 95% CI, 0.48-1.60; $P = .89$). White patients enrolled in Medicaid showed decreased but insignificant odds of being admitted for chronic ACSCs compared with their uninsured counterparts during the post-expansion period (OR, 0.81; 95% CI, 0.27-1.34; $P = .43$). However, when combining race/ethnicity and Medicaid enrollment status, disparities between Hispanic and white patients enrolled in Medicaid and their uninsured counterparts for the chronic composite increased (OR, 1.29; 95% CI, 1.07-1.51; $P = .02$) during the post-expansion period (Table 4).

DISCUSSION

ACSCs are conditions that could have been prevented if the patient had received high-quality outpatient care.^{18,19} ACSCs have been widely used to assess the quality of outpatient care²⁷ and disparities in care.²⁸ We used complete hospital admission data from Nevada, a state that expanded Medicaid under provisions of the ACA, to evaluate access to care among newly eligible Medicaid enrollees by examining admissions for ACSCs before and after expansion. In our study, we saw no increase in preventable hospital admissions among the general population of Medicaid beneficiaries following Nevada's Medicaid expansion. Concerns²⁹ have been raised

that adding additional Medicaid enrollees may jeopardize the care of individuals already insured by this program due to an insufficient number of providers available to care for this growing pool. However, we found no evidence of impaired primary care access among Medicaid beneficiaries who traditionally have the greatest barriers to access primary care. Our findings are in line with the recent evidence from the Massachusetts healthcare reform.³⁰ These findings may indicate that new Medicaid beneficiaries may not suffer from impaired access to primary care.

Importantly, our study also found that Hispanic patients enrolled in Medicaid were more likely to be admitted for ACSCs after Nevada's Medicaid expansion. Historically, Hispanics have the highest uninsured rate in Nevada, and this racial/ethnic minority group had seen one of the fastest decreases in uninsured rates, dropping from 34% in 2013 to 19% in 2015.¹ Despite this fact, national rates of ACSC admissions have been stagnant or increasing for Hispanic patients.²⁸ Outpatient care system may be less attuned to the care needs of racial/ethnic minority patients with chronic conditions compared with white patients.²⁸ The hospitalizations for ACSCs are indicative of conditions that require constant monitoring, medication management, and continuity of care (chronic ACSCs measure), as well as conditions that need a timely intervention, such as prescription of antibiotics (acute ACSCs measure). Minority patients may find it more difficult to access timely care for acute conditions²⁷ as well as maintain the ongoing interaction with multiple providers required for chronic care.²⁸ Our findings are in line with those of previous research on the Massachusetts statewide healthcare reform, which showed no improvement in ACSC hospitalizations for racial and ethnic minorities compared with a pre-reform period.³¹ Moreover, our findings indicate that, in states like Nevada with a historic shortage in healthcare workforce and substantial uninsured rates among racial/ethnic minorities, improving access to outpatient care could become a more challenging endeavor, despite the improvements in health insurance coverage from national policy changes. Future research is needed to examine the barriers to the provision of comprehensive care for minority patients, especially in states, like Nevada, whose healthcare infrastructure and resources are below national average levels.

Limitations

Our study has several limitations. First, ASCSs are only able to measure the changes in access to outpatient care indirectly, because we were not able to assess actual outpatient utilization or

patient experiences of access to care. Thus, our findings of access to outpatient care should be interpreted with caution. Second, our study was not able to obtain data on ACSCs from a comparable control state that did not expand Medicaid. Therefore, our findings may be representative of Nevada or similar states only. Third, our data are limited to 7 quarters of the post-expansion period (2014 and 3 quarters of 2015) and may not adequately reflect the effects of Medicaid expansion in Nevada. Fourth, our data did not allow us to differentiate between the current and new Medicaid beneficiaries, which led us to examine the overall changes in differences between Medicaid and uninsured patients regarding access to outpatient care after the Medicaid expansion. It is worth noting that the age and gender compositions of the Medicaid and uninsured cohorts have changed in the post-expansion period. Although we have controlled for gender and age in our analyses, we were not able to account for potential unobserved factors, such as migration, that could potentially be responsible for the above mentioned compositional changes and thus affect our findings. Future research should consider using other quasi-experimental designs, such as propensity scores, that allow controlling for potential unobserved factors that could play a role in the relationship between the Medicaid expansion and ACSCs. Nevertheless, we believe that our findings provide an important early evidence of effects of Medicaid expansion in Nevada, a state that experienced one of the largest increases in the number of newly insured Medicaid beneficiaries. Fifth, expanded access to insurance could have increased access to inpatient care, in general, thus offsetting any declines because of improved outpatient access. However, previous research shows that only specific conditions, such as discretionary surgical procedures, would be more likely to see an increase in demand for inpatient care.²⁷ Our study has focused on conditions, admissions for those have shown to decline when access to outpatient care improves, thus an increased access to inpatient care should not affect our findings. Finally, our data do not contain robust measures of barriers that could impact access to care for minority patients (e.g., availability of translators in the area, patient's preferred language, etc), thus limiting our ability to explain why minority patients were more likely to be hospitalized for ASCSs. Future research should address this limitation by incorporating multiple robust measures of barriers to accessing care for minority patients in Nevada.

CONCLUSIONS

Hospitalizations for ACSCs are key measures of access to outpatient care, and they represent a clinical failure for patients and a needless burden on scarce healthcare resources. Our findings, therefore, have important policy implications. First, evidence suggests that presence of insurance substantially improves access to care across many settings, conditions, and populations. The fact that we found no evidence that Nevada's Medicaid expansion diminished disparities in such admissions suggests that Nevada's Medicaid expansion program might need to be optimized to realize improvements in access to outpatient care, particularly for minority patients. Future research is needed to examine specific modifications that could improve access to outpatient care and prevent ACSC admissions among racial/ethnic minorities. Second, for other states still considering whether to expand Medicaid under ACA, our study suggests that a thorough assessment of available healthcare resources (e.g., adequacy of healthcare provider workforce with anticipated demand for care) needs to take place prior making a final decision. An inadequate balance between demand for care among eligible Medicaid enrollees and supply of providers may deprive patients in more crowded Medicaid programs from needed care, thus limiting the benefits of being insured. Third, reducing the gap between Medicare and Medicaid reimbursement rates can encourage physicians to accept more Medicaid patients, which may alleviate the provider shortage problem, especially in states like Nevada where physician supply is historically far below the national average. Finally, our findings highlight a possibility for an additional financial burden that is placed on Nevada's Medicaid program through observed increases in rates of ACSC hospitalizations, even among a smaller fraction of its enrollees, such as Hispanic patients. Recent evidence³² indicates that costs for an inpatient ACSC visit were 10 times higher (\$11,414 vs \$859) compared with an ACSC visit in the outpatient setting. Thus, it is important to identify ways to expand outpatient resources and improve health management among Hispanic Medicaid patients to avoid conditions that may lead to more expensive hospital-based encounters.

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Table 1. Patient Sociodemographic, Hospitalization, and Hospital Characteristics by Insurance Status^a

	Pre-Expansion (n = 107,940)			Post Expansion (n = 106,016)		
Variable	Medicaid (n = 58,652)	Uninsured (n = 49,288)	<i>P</i>	Medicaid (n = 87,952)	Uninsured (n = 18,064)	<i>P</i>
Sociodemographic characteristics						
Age, years	23.6 (20.7)	36.0 (21.0)	<.01	28.4 (21.1)	33.1 (22.5)	<.01
Sex, %			<.01			<.01
Male	34.2	49.2		39.6	48.4	
Female	65.8	50.8		60.4	51.6	
Race, %			<.01			<.01
White	37.1	49.6		42.0	44.5	
Black	19.9	12.0		19.6	9.7	
Hispanic	30.3	26.1		25.6	29.4	
Asian	4.5	5.2		4.7	6.5	
Other	8.2	7.1		8.1	9.9	
Hospitalization characteristics						
Length of stay, days	5.3 (13.7)	4.0 (7.6)	.08	5.1 (11.3)	3.8 (8.9)	<.01
Admitted through ED [%]	37.5	69.0	<.01	46.6	61.4	<.01
Hospital characteristics [%]						
Ownership			<.01			<.01
Public	21.8	24.7		16.2	17.9	
Not-for-profit	19.4	28.4		17.9	31.0	
For-profit	59.8	46.9		65.9	51.1	
Teaching hospital	54.8	62.3	<.01	48.5	41.9	.07
Rural hospital	3.0	4.3	<.01	2.8	5.4	<.01

ED indicates emergency department.

^aData are expressed as mean (SD) unless otherwise indicated.

Table 2. Percentage of Patients with PQI Conditions by Insurance Status Before and After Medicaid Expansion

	Pre-Expansion (n = 107,940)			Post Expansion (n = 106,016)		
PQI Measure	Medicaid (n = 58,652)	Uninsured (n = 49,288)	Difference	Medicaid (n = 87,952)	Uninsured (n = 18,064)	Difference
Overall composite	9.0%	15.2%	−6.2%	9.9%	13.6%	−3.7%
Acute composite	2.5%	4.3%	−1.8%	2.8%	4.3%	−1.5%
Chronic composite	6.5%	10.9%	−4.4%	7.1%	9.3%	−2.3%

PQI indicates Prevention Quality Indicator.

Table 3. Changes in Disparities in PQIs Between Medicaid and Uninsured Patients Before and After Medicaid Expansion^a

Independent Variable	OR	95% CI	<i>P</i>
Overall Composite			
Pre-expansion: Medicaid vs uninsured	0.50	0.16-0.83	<.01
Post-expansion: Medicaid vs uninsured	0.62	0.29-0.94	<.01
Changes in difference (post-expansion difference – pre-expansion difference)	0.80	0.34-1.27	.36
Acute Composite			
Pre-expansion: Medicaid vs uninsured	0.58	0.33-0.82	<.01
Post-expansion: Medicaid vs uninsured	0.71	0.48-0.95	<.01
Changes in difference (post-expansion difference – pre-expansion difference)	0.81	0.47-1.15	.23
Chronic Composite			
Pre-expansion: Medicaid vs uninsured	0.51	0.20-0.83	<.01
Post-expansion: Medicaid vs uninsured	0.59	0.29-0.90	<.01
Changes in difference (post-expansion difference – pre-expansion difference)	0.86	0.43-1.30	.51

OR indicates odds ratio; PQI, Prevention Quality Indicator.

^aControlling for patient sociodemographic factors, comorbidities, and hospital characteristics.

Table 4. Changes in Racial and Ethnic Disparities in PQI Differences Between Medicaid and Uninsured Patients Before and After Medicaid Expansion^a

Independent Variable	OR	95% CI	P
Overall Composite			
Change in difference (post-expansion difference – pre-expansion difference) among whites	0.71	0.14-1.29	.25
Change in difference (post-expansion difference – pre-expansion difference) among Hispanics	0.85	0.26-1.45	.85
Change in difference (post-expansion difference – pre-expansion difference) between Hispanic and white	1.20	1.01-1.38	.05
Acute Composite			
Change in difference (post-expansion difference – pre-expansion difference) among whites	0.75	0.35-1.14	.75
Change in difference (post-expansion difference – pre-expansion difference) among Hispanics	0.79	0.33-1.25	.79
Change in difference (post-expansion difference – pre-expansion difference) between Hispanic and white	1.06	0.76-1.36	.70
Chronic Composite			
Change in difference (post-expansion difference – pre-expansion difference) among whites	0.81	0.27-1.34	.43
Change in difference (post-expansion difference – pre-expansion difference) among Hispanics	1.04	0.48-1.60	.89
Change in difference (post-expansion difference – pre-expansion difference) between Hispanic and white	1.29	1.07-1.51	.02

* Results of comparisons between African American, Asian and Pacific Islander, and other ethnicities/races with white are not displayed because none of them is statistically significant.

OR indicates odds ratio; PQI, Prevention Quality Indicator.

^aControlling for patient sociodemographic factors, comorbidities, and hospital characteristics.

Figure. Admissions for Overall, Acute, and Chronic Quality Composites by Insurance Type

